



TN. DM. OF
AIR POLLUTION CONTROL

2015 MAY 20 PM 12:48

Tennessee Valley Authority, 1101 Market Street, Chattanooga, TN 37402-2801

May 7, 2015

RECEIVED

Mr. Barry Stephens, P.E. Director
Division of Air Pollution Control
Tennessee Department of Environment
and Conservation
Tennessee Tower William R. Snodgrass Building
312 Rosa L Parks Avenue
Nashville, Tennessee 37243

Dear Mr. Stephens:

**TENNESSEE VALLEY AUTHORITY (TVA) – NORTON HILL MICROWAVE STATION -
CONSTRUCTION APPLICATION FOR EMERGENCY GENERATOR**

Please find enclosed the referenced construction permit application. This application is to construct one new 43.5 hp propane-powered emergency generator at TVA's Norton Hill Microwave Station.

If you have any questions or comments concerning this correspondence, please contact Jack Byars at (423) 751-2666 in Chattanooga, Tennessee.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Hall", written over a horizontal line.

Billy R. Hall, Jr
General Manager
Telecom and Control Systems

Enclosures



**CONSTRUCTION PERMIT APPLICATION FOR
PROPANE ENGINE FOR EMERGENCY
GENERATOR AT NORTON HILL
MICROWAVE STATION**

JACKSON, TENNESSEE

MAY 2015

State of Tennessee
 Department of Environment and Conservation
 Division of Air Pollution Control
 William R. Snodgrass Tennessee Tower
 312 Rosa L. Parks Avenue, 15th Floor
 Nashville, TN 37243
 Telephone: (615) 532-0554



7N. DIV. OF
 AIR POLLUTION CONTROL
 2015 MAY 20 PM 12:48

APC 100

NON-TITLE V PERMIT APPLICATION FACILITY IDENTIFICATION

Please type or print and submit in duplicate for each emission source. Attach appropriate source description forms.				
SITE INFORMATION				
1. Organization's legal name Tennessee Valley Authority (TVA) - Norton Hill Microwave Station			For APC use only	APC Company permit no. 57-0404-01
2. Site name (if different from legal name)				APC Log/Permit no. 970314
3. Site address (St./Rd./Hwy.) Hwy 45 South			County name Madison	
City or distance to nearest town Jackson, TN		Zip code 38305	4. NAICS or SIC code 4911	
5. Site location (in lat. /long.)	Latitude 35.531		Longitude -88.777	
CONTACT INFORMATION (RESPONSIBLE PERSON)				
6. Responsible person/Authorized contact Billy R. Hall, Jr.			Phone number with area code 423-751-6963	
Mailing address (St./Rd./Hwy.) 1101 Market Street, MR 3H-C			Fax number with area code	
City Chattanooga	State TN	Zip code 37402	Email address brhall1@tva.gov	
CONTACT INFORMATION (TECHNICAL)				
7. Principal technical contact Taylor E. Korth			Phone number with area code 423-751-3162	
Mailing address (St./Rd./Hwy.) 1101 Market Street, MR 4G - C			Fax number with area code	
City Chattanooga	State TN	Zip code 37402	Email address tkorth@tva.gov	
CONTACT INFORMATION (BILLING)				
8. Billing contact Jack G. Byars			Phone number with area code 423-751-2666	
Mailing address (St./Rd./Hwy.) 1101 Market Street, BR 4A - C			Fax number with area code 423-751-7011	
City Chattanooga	State TN	Zip code 37402	Email address jgbyars@tva.gov	
EMISSION SOURCE INFORMATION				
9. Emission source no. (number which uniquely identifies this source) PEG-1				
10. Brief description of emission source 43.5 hp propane engine for emergency generator. Cummins Generator Model C20 N6. Cummins Engine Model QSJ2.4. 2014 Model Year.				
11. Normal operation:	Hours/Day 8.33	Days/Week	Weeks/Year	Days/Year 12
12. Percent annual throughput	Dec. - Feb. 25%	March - May 25%	June - August 25%	Sept. - Nov. 25%

(Over)

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APC 102

NON-TITLE V PERMIT APPLICATION PROCESS OR FUEL BURNING SOURCE DESCRIPTION

Please type or print and submit in duplicate and attach to the Non-Title V Facility Identification Form (APC 100).			
GENERAL IDENTIFICATION AND DESCRIPTION			
1. Organization name Tennessee Valley Authority (TVA) - Oswald Dome Microwave Station		For APC use only	APC Company – Point no.
2. Emission source no. (As on Non-Title V Facility Identification Form) PEG-1			APC Log/Permit no.
3. Description of process unit 43.5 hp propane engine for emergency generator. Cummins Engine Model QSJ2.4. 2014 Model Year.			
PROCESS SOURCE DESCRIPTION AND DATA			
4. Type of source		(Check only one option below)	
Process Source: Apply for a separate Permit for each source. (Check at right and complete lines 5, 6, and 11)		()	
Process Source with in process fuel: Products of combustion contact materials heated. Apply for a separate permit for each source. (Check at right and complete lines 5, 6, and 8 through 11)		()	
Non-Process fuel burning source: Products of combustion do not contact materials heated. Complete this form for each boiler or fuel burner and complete a Non-Title V Emission Point Description Form (APC 101) for each stack. (Check at right and complete lines 7 to 11)		(X)	
5. Type of operation: Continuous () Batch ()		Normal batch time	Normal batches/day
6. Process material inputs and In-process solid fuels		Diagram reference	
		Input rates (pounds/hour)	
		Design	Actual
A.			
B.			
C.			
D.			
E.			
F.			
G.			
Totals			

* A simple process flow diagram must be attached.

(Over)

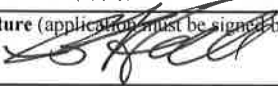
TYPE OF PERMIT REQUESTED				
13. Operating permit ()	Date construction started	Date completed	Last permit no.	Emission source reference number
Construction permit (X)	Last permit no.	Emission source reference number PEG-1		
If you choose Construction permit, then choose either New Construction, Modification, or Location transfer				
	New Construction (X)	Starting date July 2015	Completion date July 2015	
	Modification ()	Date modification started or will start	Date completed or will complete	
	Location transfer ()	Transfer date	Address of last location	
14. Describe changes that have been made to this equipment or operation since the last construction or operating permit application:				
N/A				
SIGNATURE				
Based upon information and belief formed after a reasonable inquiry, I, as the responsible person of the above mentioned facility, certify that the information contained in this application and any attached application(s) is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty of perjury.				
15. Signature (application must be signed before it will be processed)			Date	
			05/11/2015	
Signer's name (type of print) Billy R. Hall, Jr.		Title General Manager, Telecom	Phone number with area code 423-751-6963	

Table of Pollution Reduction Device or Method Codes

Note: For cyclones, settling chambers, wet scrubbers, and electrostatic precipitators; the efficiency ranges correspond to the following percentages:

High: 95-99+% Medium: 80-95% And Low: Less than 80%.

If the system has several pieces of connected control equipment, indicate the sequence. For example: 008'010,97%

If none of the below codes fit, use 999 as a code for other and specify in the comments.

No Equipment.....	000	Limestone Injection – Dry.....	041
Activated Carbon Adsorption.....	048	Limestone Injection – Wet.....	042
Afterburner – Direct Flame.....	021	Liquid Filtration System.....	049
Afterburner – Direct Flame with Heat Exchanger.....	022	Mist Eliminator – High Velocity.....	014
Afterburner – Catalytic.....	019	Mist Eliminator – Low Velocity.....	015
Afterburner – Catalytic with Heat Exchanger.....	020	Process Change.....	046
Alkalized Alumina.....	040	Process Enclosed.....	054
Catalytic Oxidation – Flue Gas Desulfurization.....	039	Process Gas Recovery.....	060
Cyclone – High Efficiency.....	007	Settling Chamber – High Efficiency.....	004
Cyclone – Medium Efficiency.....	008	Settling Chamber – Medium Efficiency.....	005
Cyclone – Low Efficiency.....	009	Settling Chamber – Low Efficiency.....	006
Dust Suppression by Chemical Stabilizers or Wetting Agents.....	062	Spray Tower (Gaseous Control Only).....	052
Electrostatic Precipitator – High Efficiency.....	010	Sulfuric Acid Plant – Contact Process.....	043
Electrostatic Precipitator – Medium Efficiency.....	011	Sulfuric Acid Plant – Double Contact Process.....	044
Electrostatic Precipitator – Low Efficiency.....	012	Sulfur Plant.....	045
Fabric Filter – High Temperature.....	016	Vapor Recovery System (Including Condensers, Hooding and Other Enclosures).....	047
Fabric Filter – Medium Temperature.....	017	Venturi Scrubber (Gaseous Control Only).....	053
Fabric Filter – Low Temperature.....	018	Wet Scrubber – High Efficiency.....	001
Fabric Filter – Metal Screens (Cotton Gins).....	059	Wet Scrubber – Medium Efficiency.....	002
Flaring.....	023	Wet Scrubber – Low Efficiency.....	003
Gas Adsorption Column – Packed.....	050	Wet Suppression by Water Sprays.....	061
Gas Adsorption Column – Tray Type.....	051		
Gas Scrubber (General: Not Classified).....	013		

Table of Emission Estimation Method Codes

Not application / Emissions are known to be zero.....	0
Emissions based on source testing.....	1
Emissions based on material balance using engineering expertise and knowledge of process.....	2
Emissions calculated using emission factors from EPA publications No. AP-42 Compilation of Air Pollution Emissions Factors.....	3
Judgment.....	4
Emissions calculated using a special emission factor different from that in AP-42.....	5
Other (Specify in comments).....	6

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APC 101

NON-TITLE V PERMIT APPLICATION EMISSION POINT DESCRIPTION

Please type or print and submit in duplicate for each stack or emission source. Attach to the Non-Title V Facility Identification Form (APC 100).								
GENERAL IDENTIFICATION AND DESCRIPTION								
1. Organization name Tennessee Valley Authority (TVA) - Oswald Dome Microwave Station						For APC use only	APC Company point no.	
2. Emission source no. (As on Non-Title V Facility Identification Form) PEG-1				Flow diagram point number N/A			APC Log/Permit no.	
3. Brief emission point description (Attach a sketch if appropriate): 43.5 hp propane engine for emergency generator. Cummins Engine Model QSJ2.4. 2014 Model Yr						Distance to nearest property line (Ft.)		
STACK AND EMISSION DATA								
4. Stack or emission point data: →	Height above grade (Ft.) 4	Diameter (Ft.)	Temperature (°F) 1144	% of time over 125°F	Direction of exit (Up, down or horizontal)			
Data at exit conditions: →	Flow (actual Ft. ³ /Min.) 110.7	Velocity (Ft./Sec.)	Moisture (Grains/Ft. ³)		Moisture (Percent)			
Data at standard conditions: →	Flow (Dry std. Ft. ³ /Min.)	Velocity (Ft./Sec.)	Moisture (Grains/Ft. ³)		Moisture (Percent)			
5. Air contaminants	Actual emissions				Emissions est. method code	Control devices *	Control efficiency%	
	Emissions (Lbs./Hr.)		Concentration	Avg. emissions (Tons/Yr.)				
	Average	Maximum						
Particulate matter	0.0147	0.0147	**	7.34E-04	5			
Sulfur dioxide (SO ₂)	0.00103	0.00103	***	5.14E-05	5			
Carbon monoxide (CO)	37.1	37.1	PPM	1.86	5			
Organic compounds			PPM					
Nitrogen oxides (NOx) + Hydrocarbons	0.959	0.959	PPM	0.0479	5			
Fluorides								
Greenhouse gases (CO ₂ equivalents)	37.6	37.6		1.88	5			
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)								

(Over)

BOILER, BURNER, GENERATOR, OR SIMILAR FUEL BURNING PROCESS DESCRIPTION								
7. Boiler or burner data: (Complete lines 7 to 11 using a separate form for each boiler, burner, etc.)								
Number	Stack number**	Type of firing***	Rated horsepower	Rated input capacity (10 ⁶ BTU/Hr.)	Other rating (specify capacity and units)			
	PEG-1	Internal Combustion	43.5	0.270				
Serial no.	Date constructed	Date manufactured	Date of last modification (explain in comments below)					
	July/2015	July/2015						
** Source with a common stack will have the same stack number. *** Cyclone, spreader (with or without reinjection), pulverized (wet or dry bottom, with or without reinjection), other stoker (specify type, hand fired, automatic, or other type (describe below in comments)).								
FUEL USED IN BOILER, BURNER, GENERATOR, OR SIMILAR FUEL BURNING SOURCE								
8. Fuel data: (Complete for a process source with in process fuel or a non-process fuel burning source)								
Primary fuel type (specify) propane				Standby fuel type(s) (specify)				
Fuels used	Annual usage	Hourly usage		% Sulfur	% Ash	BTU value of fuel	(For APC use only) SCC code	
		Design	Average					
Natural gas:	10 ⁶ Cu. Ft.	Cu. Ft.	Cu. Ft.	/ / / / / / / /	/ / / / / /	1,000		
#2 Fuel oil:	10 ³ Gal.	Gal.	Gal.		/ / / / / /			
#5 Fuel oil:	10 ³ Gal.	Gal.	Gal.		/ / / / / /			
#6 Fuel oil:	10 ³ Gal.	Gal.	Gal.		/ / / / / /			
Coal:	Tons	Lbs.	Lbs.					
Wood:	Tons	Lbs.	Lbs.	/ / / / / / / /	/ / / / / /			
Liquid propane:	10 ³ Gal. 0.294	Gal. 2.94	Gal. 2.94	/ / / / / / / /	/ / / / / /	92,000		
Other (specify type & units):								
9. If Wood is used as a fuel, specify types and estimate percent by weight of bark								
10. If Wood is used with other fuels, specify percent by weight of wood charged to the burner.								
11. Comments								

6. Check types of monitoring and recording instruments that are attached: Opacity monitor (), SO ₂ monitor (), NO _x monitor (), Other (specify in comments) ()	
7. Comments	
8. Control device or Method code description:	Description of operating parameters of device (flow rate, temperature, pressure drop, etc.): 000

- *** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Table of Pollution Reduction Device or Method Codes
(Alphabetical listing)

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Emissions based on material balance using engineering expertise and knowledge of process	2
Emissions calculated using emission factors from EPA publications No. AP-42 Compilation of Air Pollution Emissions Factors	3
Judgment	4
Emissions calculated using a special emission factor different from that in AP-42	5
Other (Specify in comments)	5

Table 1. Small Emergency Propane Generator Engine at Oswald Dome Microwave Station in Reliance, Tennessee

Emission Source				Oswald Dome Microwave Station Engine	
Engine Model Year				2015	
Propane Engine Horsepower, hp*				43.5	
Propane Fuel Heat Content, Btu/gal				92,000	
Propane Fuel Use, gal/hr*				2.94	
Propane Engine Heat Input Rating, MMBtu/hr				0.270	
Potential Annual Hours of Operation, hr**				100	
	US EPA				
	Emission Standards	Emission Factor***	Emission Factor****	Emissions	
	g/hphr	lb/1000 gal	lb/MMBtu	lb/hr	ton/yr**
Particulate Matter (PM ₁₀)		5		0.0147	7.34E-04
Nitrogen Oxides (NO _x) + Hydrocarbons (HC)	10			0.959	0.0479
Carbon Monoxide (CO)	387			37.1	1.86
Sulfur Dioxide (SO ₂)		0.35		0.00103	5.14E-05
Carbon Dioxide Equivalent (CO ₂ e)			139.2	37.6	1.88

* Based on information from manufacturer, Cummins Power Generation.

** Potential annual emissions based on 100 hours per year of operation. This is not a permit restriction.

*** San Diego Air Pollution Control District, Air Toxics Section (6/99), Uncontrolled Propane Fired Internal Combustion Engine.

**** CO₂ factor is 62.87 kg CO₂/MMBtu, CH₄ factor is 0.003 kg CH₄/MMBtu, N₂O factor is 0.0006 kg N₂O/MMBtu.

CO₂ equivalent factor for CO₂ is 1, CO₂ equivalent factor for CH₄ is 25, CO₂ equivalent factor for N₂O is 298.

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HIP 15.3.3 ZP4505

TDEC DIVISION OF AIR POLLUTION CON
312 ROSA L PARKS AVE
FL 15
NASHVILLE TN 37243-1102

Page 1 of 1
Print Your Documents

SHIP TO:
1100 MARSH ST, PMB C
CHATTANOOGA, TN 37401
TVA
14327 529450
EQUATEL

0.5 LBS LTR 1 OF 1

SHIP TO:
MIC. BAILEY STEPHENS
1425/517235
TDEC, DIVISION OF AIR POLLUTION CON
WILLIAM R. SNOODGRASS TOWER
312 ROSA L. PARKS AVE, 15TH FLOOR
NASHVILLE TN 37243

TN 371 9-02

UPS NEXT DAY AIR
TRACKING #: 1Z311 380 01 9880 6198
1

BILLING: PEP

Reference No 1 203145-1.1
Reference No 2 203145-1.1

<http://tva.agileelite.com/agileelite/projects/image.aspx> 5/19/2015

